

A NEW SPECIES OF MYSTACOCARIDA (CRUSTACEA)
FROM ALGOA BAY, SOUTH AFRICA

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(With 1 figure and 2 tables)

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INTRODUCTION

Until the revision by Hessler (1972) of the African mystacocarids, all those recorded on the African coasts were regarded as subspecies of *Derocheilocaris remanei* Delamare Deboutteville & Chappius. *D. r. katesae* Noodt was recorded from Durban, South Africa; *D. r. remanei* Delamare Deboutteville & Chappius from Swakopmund, South West Africa; *D. r. remanei* from Luanda, Angola; *D. r. remanei* from Kayar, Senegal, and *D. r. remanei* from the Mediterranean (Hessler 1972).

In the light of the discovery of a distinct species, *D. ingens* Hessler, in Maine, within 260 km of the known range of *D. typica* Pennak & Zinn, Hessler (1972) raised the subspecies of *D. remanei* from Angola and Swakopmund to specific status as *D. angolensis* and *D. delamarei* respectively. Although Hessler (1972) was not able to examine specimens of *D. r. katesae* from Durban he stated that because it was separated from other populations of *D. remanei* by the Swakopmund and Angolan species it probably also warranted specific status.

Hessler (1972) based his differentiation of species on very small morphological differences; differences which were not recognized as specific differences by Noodt (1954). Confirmation of the validity of the specific status of such slightly different morphological forms has now come from the co-occurrence of two closely related species in Algoa Bay, South Africa.

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Here two distinct mystacocarid species, one of them undescribed, have been taken from the same part of the same beach. This is the second recorded overlap of distribution of two mystacocarid species. One has been identified as *D. delamarei* Hessler as it appears to differ from the original description in only the very slightest details. Eight adult specimens of this species have been found in Algoa Bay to date. The other species recorded in Algoa Bay differs significantly from previously described species and is here designated a new species.

MATERIALS

All the specimens described here have been obtained from the intertidal sands of King's Beach, the main bathing beach of Port Elizabeth (33°58'S, 25°39'E) and Bluewater Bay (33°51'S, 25°39'E). Both these beaches are in Algoa Bay. Sand samples were collected during low and mid tides between January and July 1973. The mystacocarids were extracted by means of an Oostenbrink extractor (Oostenbrink 1960) as modified by Furstenberg (personal communication). They were obtained using a sieve with 75 μ mesh and were preserved in 4% formaldehyde.

SYSTEMATIC DESCRIPTIONS

Derocheilocaris algoensis sp. n.

(Fig. 1 A-D)

Holotype—S.A.M. A13535 in the South African Museum, Cape Town.
An adult female from the mid-tide region of King's Beach, Port Elizabeth, South Africa.

Paratypes—S.A.M. A13536 in the South African Museum, Cape Town.
U.S.N.M. 149165 in the United States National Museum, Washington.

Numerous adult males, females and juveniles from King's Beach, Port Elizabeth, South Africa.

Remarks

This species is named after Algoa Bay, its type locality and the only place where it has been recorded to date.

Occurrence

Numerous specimens of different larval stages as well as male and female adults have been obtained from King's Beach. These were found to occur deeper than about 10 cm in the sand between the spring low tide and mid to high tide marks. In some samples they appeared to be the most numerous meiobenthic animals in the deeper sand.

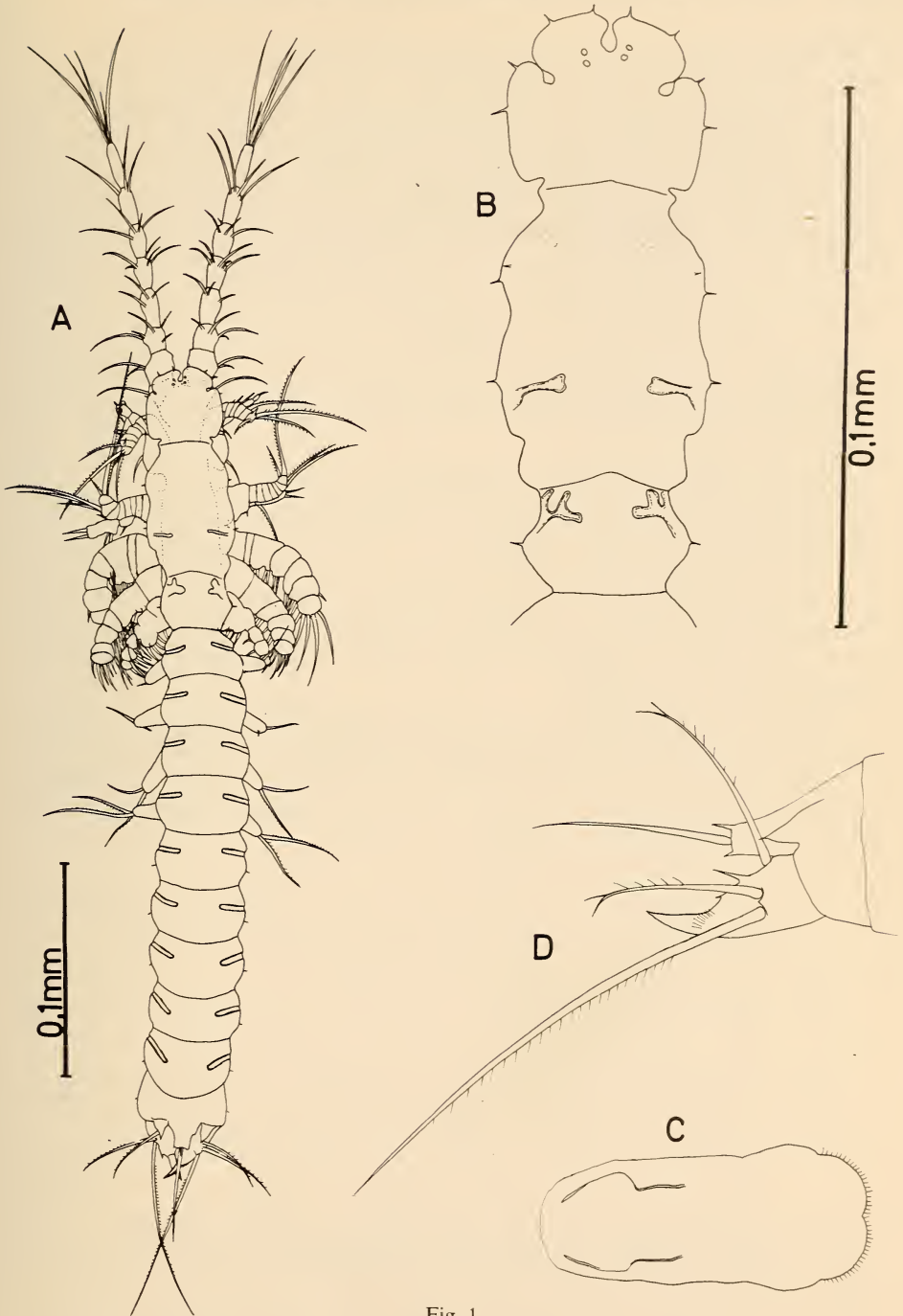


Fig. 1.
Derocheilocaris algoensis sp. n. from King's Beach, Algoa Bay. A—dorsal view of adult; B—dorsal view of cephalon; C—ventral view of labrum; D—lateral view of telson showing furcal claws and setae.

Diagnosis of adult

(All terms are as used by Hessler 1972.)

Anteromedial lobes of antennular portion of cephalon without medial spines as in *delamarei* (Fig. 1B); sides of antennular portion of cephalon convex and not converging appreciably posteriorly; posterolateral corners of antennular portion of cephalon moderately angular; constriction separating antennular portion of cephalon from rest of cephalon a moderately deep notch in dorsal view; immediately posterior to notch sides of cephalon converge before expanding into antennary region; anterolateral pair of spines in antennary region of cephalon not borne on pronounced protuberances as in *remanei*.

Posterior part of labrum (Fig. 1C) not as expanded as in *D. typica* and with a slight notch in some specimens.

Lateral toothed furrows moderately developed with irregular margins and no distinct teeth.

Distal segment of maxilla 1 with 8 setae.

Endopod of maxilliped with 1 seta on distal segment and 2 setae on penultimate segment.

Supra-anal process (Fig. 1D) terminating in moderate acute process ventral and well-developed acute process dorsal to supra-anal seta; no strongly developed spines around base of acute processes; setules on ventral setae of furcal claws smaller than in *delamarei*; supra-anal seta usually longer than middle or dorsal furcal setae.

The ratios of the lengths of the different furcal and the supra-anal setae to the lengths of the furcal claws were measured as by Hessler (1972) and are given in Table 1. Figures in Table 1 marked with an asterisk differ significantly ($p = 0,01$) from values for the same ratios in all species described by Hessler (1972).

Table 1.

Ratios of lengths of supra-anal and furcal claw setae to furcal claw lengths in adult *D. algoensis*.

	No	Mean	S.D.	Range
*SSe/F	16	1,01	0,09	0,84-1,18
M/F	16	0,94	0,08	0,77-1,07
D/F	16	0,88	0,11	0,68-1,05
*V/F	16	2,23	0,16	1,95-2,49

F = furcal claw length; SSe = supra-anal seta length; M = middle furcal seta length; D = dorsal furcal seta length; V = ventral furcal seta length; No = number of specimens measured; S.D. = standard deviation;

* indicates ratios significantly different from those for previously described species.

In 15 adults measured, the body length (from the anterior tip of the cephalon to the posterior tip of the furcal claws) averaged $0,39 \pm 0,02$ mm with a range of 0,37–0,42 mm.

D. algoensis is most quickly identified by (1) the shape of the anterior portion of the cephalon (Fig. 1B), (2) the long (but not as long as *D. delamarei*) ventral furcal setae (Fig. 1D). Table 2 is a summary of some of the more important features whereby *D. r. remanei*, *D. delamarei*, *D. algoensis* and *D. r. katesae* can be distinguished.

Table 2.

Summary of main distinguishing characteristics for four mystacocarids recorded on the African coasts. Compiled from Noodt (1954), Hessler (1972) and the present work.

FEATURE	<i>D. r. remanei</i>	<i>D. delamarei</i>	<i>D. algoensis</i>	<i>D. r. katesae</i>
Antero-medial notch of antennular portion of cephalon	U-shaped	U-shaped with spines	U-shaped	V-shaped
Constriction separating antennular part of cephalon from rest of cephalon	notched	notched	notched	not notched
Anterolateral spine on antennary part of cephalon	on protuberance	on protuberance	on margin	—
Toothed furrows	well developed	well developed	moderately developed	—
SSe longer or shorter than M and D	shorter	shorter	longer	—
Ventral furcal seta	short	very long	long	long
Spines on supra-anal process	small	large	small	small
Acute process(es) on supra-anal process	ventral to SSe	ventral to SSe	ventral & dorsal to SSe	ventral to SSe

Larvae

A number of larvae corresponding to the later larval stages described by Hessler & Sanders (1966) for *D. typica* have been found during the winter months. It is hoped that at a later stage when a complete series of larval stages has been collected it might be possible to publish a description of the larval development of *D. algoensis*.

Derocheilocaris delamarei Hessler, 1972

Eight adults and a number of larvae were found near and below low tide at King's Beach and Bluewater Bay. They were taken in the surface 10 cm of the sand during late summer. These specimens are immediately distinguishable from *D. algoensis* by their very long ventral furcal setae which bear long setules. They appear to resemble *D. delamarei* in practically all details. The only difference noted is that the ventral furcal setae bear 27–37 setules whereas *D. delamarei* as illustrated by Hessler (1972) bears 48 setules on the ventral furcal setae. Setal length/furcal claw length ratios fall in the same order as recorded for *D. delamarei* (Hessler 1972). The number of setules on the ventral furcal setae of *D. delamarei* as well as the shape of the cephalon in *D. r. katesae* may not be reliable in the published descriptions so that the differences relating to these features may be of limited value. Considering that 2 100 km of coastline separate Swakopmund and Algoa Bay, it is surprising that *D. delamarei* differs so little in form at the end of its known range. The relative rarity of specimens of *D. delamarei* in Algoa Bay might indicate that this is near the eastern limit of the distribution of this species.

DISCUSSION

Two distinct mystacocarid species are here recorded from the same beach. One species, *D. delamarei*, appears to occur in the surface 10 cm of the sand and has only been found in summer, while another species, *D. algoensis*, is plentiful at depths greater than 10 cm in the sand. Algoa Bay is probably near the eastern limit of the range of *D. delamarei*. This is the second recorded overlap between two mystacocarid species.

These two species differ in details so small that, before the publication of Hessler's (1972) review, they would not have been considered sufficient to warrant separate species status. Nevertheless, because these small differences remain distinct, even where the species occur together, they must indicate different species. This therefore confirms the view of Hessler (1972) that mystacocarids are very conservative and that small yet constant differences do constitute specific differences. In this respect the shape of the antennular portion of the cephalon and the lengths of the supra-anal and furcal claw spines appear to be especially important characteristics.

SUMMARY

An overlap of distribution of two mystacocarid species is recorded from Algoa Bay (33°58'S, 25°39'E). One is an undescribed species, here named *Derocheilocaris algoensis* sp. n. and the other has been identified as *D. delamarei* Hessler. This is the second recorded case of overlap of mystacocarid species and supports the views of Hessler (1972) that small differences between mystacocarids do constitute specific differences.

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REFERENCES

- ARMSTRONG, J. C. 1949. The systematic position of the genus *Derocheilocaris* and the status of the subclass Mystacocarida. *Am. Mus. Novit.* **1413**: 1–6.
- DAHL, E. 1952. Reports of the Lund University Chile Expedition 1948–49; 7. Mystacocarida. *Acta Univ. lund.* **48**: 1–41.
- DELAMARE DEBOUTTEVILLE, C. 1960. *Biologie des eaux souterraines littorales et continentales*. Paris: Hermann.
- *DELAMARE DEBOUTTEVILLE, C. & DE BARROS MACHADO, A. 1954. Presence de la sous-classe des Mystacocarides sur les côtes de l'Angola. *Publções cult. Co. Diam. Angola* **23**: 118–124.
- *DELAMARE DEBOUTTEVILLE, C. & CHAPPIUS, P. A. 1951. Présence de l'orde des Mystacocarida Pennak et Zinn dans le sable des plages du Rousillon: *Derocheilocaris remanei* n. sp. *C. r. hebd. Acad. Sci., Paris* **233**: 437–439.
- *DELAMARE DEBOUTTEVILLE, C. & CHAPPIUS, P. A. 1957. Contribution à l'étude de la faune interstitielle marine des côtes d'Afrique. 1. Mystacocarides, Copepodes et Isopodes. *Bull. Inst. fr. Afr. noire (A)* **19**: 491–500.
- HESSLER, R. R. 1972. New species of Mystacocarida from Africa. *Crustaceana* **22**: 259–273.
- HESSLER, R. R. & SANDERS, H. L. 1966. *Derocheilocaris typicus* Pennak and Zinn (Mystacocarida) revisited. *Crustaceana* **11**: 141–155.
- JANSSON, B. 1966. On the ecology of *Derocheilocaris remanei* Delamare and Chappius (Crustacea, Mystacocarida). *Vie Milieu* **17**: 43–186.
- NOODT, W. 1954. Crustacea Mystacocarida von Süd Afrika. *Kieler Meeresforsch.* **10**: 243–246.
- NOODT, W. 1961. Nuevo hallazgo de *Derocheilocaris galvarini* Dahl en Chile central (Crustacea, Mystacocarida). *Investnes zool. chil.* **7**: 97–99.
- OOSTENBRINK, M. 1960. Estimate nematode populations by some selected methods. In: SASSER, J. N. & JENKINS, W. R., eds. *Nematology fundamentals and recent advances with emphasis on plant parasites and soil forms*: 85–102. Chapel Hill: University of North Carolina Press.
- PENNAK, R. W. & ZINN, D. J. 1943. Mystacocarida, a new order of Crustacea from intertidal beaches in Massachusetts and Connecticut. *Smithson. misc. Collns* **103**: 1–11.

*Not seen in the original.